

REMARKS

This is in response to the Office Action dated September 15, 2003. An extension of time is enclosed herewith to extend the time for response until January 15, 2004.

Claims 52-59 and 67-86 have been withdrawn from consideration as being directed to a non-elected invention.

Claims 1-51 and 60-66 have been rejected under 35 U.S.C. §102 as being anticipated by, or in the alternative, under 35 U.S.C. §103 as obvious over Jin (U.S. Patent No. 6,296,699) or Zaretskiy (U.S. Patent No. 6,139,619). Claims 1-51 have also been rejected under 35 U.S.C. §112 as failing to particularly point out and distinctly claim the invention for various reasons.

Dealing with the §112 rejections first, Applicants have amended claim 1 to clarify “precursors” by adding the language that they are “derived from an alkali hydroxy and a silica source”. This language is supported in the application on page 6, line 18. Further, “reactive glass” has been defined in the specification on page 6, lines 26 through page 7, line 12. As the Applicant has pointed out on page 6, the “reactive glass” is one that contributes an acid group during the curing step. More specifically, this contribution is of an acid group in the condensation reaction between the alkali silicate and the glass which occurs during the curing step. Applicants have defined “reactive glass” such that it describes a composition which is not covered by either Jin ‘699 or the Zaretskiy ‘619 patents. This mechanism allows the inventive composition of the present application to add latency to the curing process. Thus, the reaction process starts slow enough to facilitate the initial handling of the material and then allows for the cure process to accelerate during the final cure steps and in the presence of heat. The resulting product achieves a near neutral pH for the cured materials.

Regarding the remaining issues raised under §112, the spelling of the term “microsilica” has been corrected in claim 5, the parenthesis have been removed from claims 7, 8, 49, 50 and 51. Further, the terms “regular particles” and “irregular particles” have been deleted since the Examiner found them to be indefinite. These are not critical features to the present invention and thus, the phrase “particles” has been employed alone. Finally, with regard to the difference between “fumed

silica” and “silica fume”, a difference does exist in fact. These are not the same terms. They each describe silica sources which can be employed in the present invention. These differences are supported by the enclosed references from the website of the Silica Fume Association which describes silica fume as a very reactive pozzolan which finds a primary use in concrete compositions. The website includes a slide show presentation *Silica Fume in Concrete* and the slides describe it as “amorphous silica with high SiO₂ content, extremely small particle size and large surface area. This slide show goes on to point out that “silica fume” is not “fumed silica”. Another reference from the website [azom.com](http://www.azom.com) describes fumed silica as having chain-like particle morphology. The product is made by one method which involves a continuous flame hydrolysis and involves the conversion of silicon tetrachloride to the gas phase using an oxyhydrogen flame, which then reacts with water to yield silica and hydrochloric acid. The result is “fumed silica”.

Regarding the rejections under §102 as anticipated by, or alternatively, under 35 U.S.C. §103 over Jin and Zaretskiy, Applicants argue that the term “reactive glass” distinguishes the claimed composition from the compositions disclosed by Jin and Zaretskiy, and these differences are such that they are not overcome or within the scope of the teachings of either Jin or Zaretskiy.

Jin teaches a binder composition which includes a glass powder with a particles size of less than 0.15 mm and an alkali activator containing at least one alkali metal and at least one silicate. The Jin binder composition is used to make artificial stone using glass as a sole binder and aggregate. Jin does not teach, nor suggest, that the glass composition should have any reactivity by which the glass can contribute an acid group in the condensation reaction between the alkali silicate and the glass which occurs during the curing step. The glass powder of Jin is made by grinding crushed Snapple beverage bottles or Heineken beer bottles.

Zaretskiy et al. teaches an inorganic binder system for foundry compositions which include a silicate and an added phosphate. The composition produces a binder having the advantageous strength properties of a silicate binder system with the dispersibility properties of a phosphate binder system to produce products which are of particular interest to the foundry art. While Zaretskiy discloses a broad list of compositions which can be phosphates used in the binders used in the Zaretskiy composition, the only suggested glass is a sodium phosphate glass. Again, the Applicants’

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Reply to Office Action of September 15, 2003

invention is distinguished from Zaretskiy from the term "reactive glass." Zaretskiy does not disclose or teach a glass composition that can contribute an acid group in the condensation reaction between the alkali silicate and the glass which occurs during the curing step.

As noted above, Applicants' claimed composition contains a "reactive glass" and this composition is neither anticipated by nor obvious from the cited Jin and Zaretskiy references as the reactive glass of the present invention is very reactive toward water and humidity as evidenced by the ability to measure the pH of the slurry. Further, in comparison to Zaretskiy, the reactive glass of the present invention is acidic and not as highly soluble as the "glass" claimed in Zaretskiy. In use, the glass of the present invention persists as an aqueous suspension and does not completely dissolve, as do the alkali phosphate glasses claimed by Zaretskiy. Thus, the reactive glass of the present invention provides the added latency to the curing process. For these reasons, reconsideration and withdraw of the §102 and §103 rejections is respectfully requested. Therefore, the claims presently in this application, namely claims 1-51 and 60-66 should be allowable.

Should the Examiner have any questions or wish to discuss any of the foregoing in more detail, the undersigned attorney would welcome a telephone call.

Respectfully submitted,



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